

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada, for the month of October, 1884, as determined by the reports from more than eight hundred stations, is exhibited on chart iii.

In the following table are shown for each of the several geographical districts, the average October precipitation for a series of years; the average for October, 1884; and the departures, as deduced from the records of the Signal Service:

Average precipitation for October, 1884.

Districts.	Average for Oct. Signal-Service observations.		Comparison of Oct., 1884, with the average for several years.
	For several years.	For 1884.	
	Inches.	Inches.	Inches.
New England.....	4.09	2.84	-1.25
Middle Atlantic states.....	3.31	1.83	-1.48
South Atlantic states.....	4.35	1.18	-3.17
Florida peninsula.....	5.28	2.47	-2.81
Eastern Gulf states.....	3.51	2.70	-0.81
Western Gulf states.....	3.92	3.28	-0.64
Rio Grande valley.....	2.71	10.08	+7.37
Tennessee.....	3.40	2.28	-1.12
Ohio valley.....	3.31	1.87	-1.44
Lower lake region.....	3.20	2.10	-1.10
Upper lake region.....	3.61	4.78	+1.17
Extreme northwest.....	1.83	3.04	+1.21
Upper Mississippi valley.....	3.33	3.54	+0.21
Missouri valley.....	2.19	2.73	+0.54
Northern slope.....	1.18	0.63	-0.55
Middle slope.....	1.31	1.67	+0.36
Southern slope.....	2.65	4.58	+1.93
Southern plateau.....	0.75	2.05	+1.30
Northern plateau.....	2.21	2.22	+0.01
North Pacific coast region.....	4.59	3.11	-1.48
Middle Pacific coast region.....	1.18	1.82	+0.64
South Pacific coast region.....	0.58	0.37	-0.21
Mount Washington, N. H.....	6.93	12.91	+5.98
Pike's Peak, Colo.....	1.53	0.99	-0.54
Salt Lake City, Utah.....	1.95	0.36	-1.59

The precipitation for October, 1884, was excessive along the southern borders of the country, from the mouth of the Mobile river westward to New Mexico and Arizona, and over a narrow area extending from the territories last named, northeastward to the extreme northwest, and northern part of the upper lake region; the monthly precipitation was also excessive in portions of Idaho, Oregon and Washington Territory, and on the central California coast. The excess has been most marked in the Rio Grande valley, southern slope, southern plateau, and over a part of the upper lake region. At Brownsville, Texas, near the mouth of the Rio Grande river, where the average October rainfall for the last eight years is 3.31, the amount for October, 1884, was 15.71, or nearly five times the average, and at Rio Grande City, it was more than double the October average for the last six years. At El Paso, Texas, where, for the last six years, the average October rainfall is 0.99, for this year it was 5.15, or more than five times the average. At Omaha, Nebraska; Davenport, Iowa, and at Escanaba, Grand Haven and Marquette, Michigan, the monthly rainfalls were about double the average.

The precipitation has been deficient in all districts east of the Mississippi river, with the exception of the northern part of the upper lake region and the southern portions of Alabama and Mississippi. To the westward of a line extending from northern Minnesota to the mouth of the Colorado river, with the exception of central California and portions of Idaho, Oregon, and Washington Territory, the monthly precipitation has also been below the average. The departures in the districts east of the Mississippi river, as in the preceding months, August and September, are very marked, and the severe drought which prevailed in many of the states continued during October. From the following table, which shows the departures for the months of August, September and October, from the average in the several districts, it will be seen that during these months, in the districts east of the Mississippi river, with the exception of the upper lake region, the pre-

cipitation has been abnormally small, while to the westward of the Mississippi, more than the average amount of rain has fallen:

Districts.	August.	September.	October.	Total.
	Inches.	Inches.	Inches.	Inches.
New England.....	-1.51	-2.51	-1.25	-5.27
Middle Atlantic states.....	-0.94	-3.72	-1.48	-5.14
South Atlantic states.....	-0.70	-1.63	-3.17	-5.50
Florida peninsula.....	-1.98	-0.97	-2.81	-5.76
East Gulf states.....	-4.01	-1.97	-0.81	-6.79
West Gulf states.....	-1.78	+0.87	-0.64	-1.55
Rio Grande valley.....	-5.19	+4.37	+7.37	+6.55
Tennessee.....	-1.04	-1.05	-1.12	-3.21
Ohio valley.....	-1.21	+1.21	-1.44	-1.44
Lower lake region.....	-0.59	-0.51	-1.10	-2.20
Upper lake region.....	-0.24	-0.03	+1.17	+1.38
Extreme northwest.....	-2.20	+0.64	-0.21	-1.77
Upper Mississippi valley.....	-0.60	+2.33	-0.21	+1.52
Missouri valley.....	-0.51	-0.09	-0.54	-1.14
Northern slope.....	-0.36	+0.27	-0.55	-0.64
Middle slope.....	-1.07	-1.17	+0.30	-1.94
Southern slope.....	-0.72	+0.37	+2.93	+2.58
Southern plateau.....	-0.31	-0.21	+1.30	+0.78
Northern plateau.....	-0.12	+0.92	-0.01	+0.81
North Pacific coast region.....	-0.18	+1.05	-1.48	-0.61
Middle Pacific coast region.....	-0.01	+0.12	+0.64	+0.75
South Pacific coast region.....	-0.05	-0.03	-0.21	-0.29

DEVIATIONS FROM AVERAGE PRECIPITATION.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average precipitation for October, 1884. The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: monthly precipitation, 0.94, is 9.57 below the October average for the three preceding years.

Illinois.—Mattoon, Coles county: monthly precipitation, 2.80, is 3.61 below the October average for the last four years.

Auna, Union county: monthly precipitation, 1.42, is 2.92 below the October average for the last nine years.

Riley, McHenry county: monthly precipitation, 3.85, is 1.29 above the October average for a period of twenty-four years.

Sycamore, De Kalb county: monthly precipitation, 5.76, is 1.03 below the October average for the last four years.

Table of excessive and greatest monthly precipitation—October, 1884.

Station.	Specially heavy.		Largest monthly.	Amount.	Station.	Specially heavy.		Largest monthly.	Amount.
	Date.	Amt.				Date.	Amt.		
Alabama.					Michigan.				
Mt. Vernon B'ks.....	26, 27, 28	4.94			Escanaba.....	1, 2	3.37		7.97
Mobile.....	26, 27, 28	3.83			Lansing.....	1	2.43		6.91
Selma.....	27, 28, 29	2.95			Grand Haven.....	1, 2	2.14		6.10
California.					Marquette.....	2, 3	2.65		6.02
Delta.....			6.01?		Do.....	20, 21	2.13		
Dakota.					Ionia.....	1	2.34		
Fort Sisseton.....	4, 5	2.50			Port Huron.....	1, 2	2.04		
Florida.					Minnesota.				
Pensacola.....	26, 27	2.33			Moorhead.....	4, 5	2.57		
Illinois.					Nebraska.				
Rockford.....			6.24		Ashland.....			6.05	
Peoria.....	6, 7	2.52			De Soto.....	3, 4	2.60		
Wilton Center.....	7, 8	2.30			Omaha.....	3, 4	3.73		
Indiana.					New Hampshire.				
Fort Wayne.....	15	2.15			Mt. Washington.....	4, 5	4.29		12.91
Iowa.					Do.....	6, 7	3.27		
Davenport.....	6, 7, 8	4.72	7.17		New Jersey.				
Muscatine.....	9, 7	3.50	6.46		Sandy Hook.....	30, 31	2.39		
Des Moines.....	6, 7	3.75			Oregon.				
Ottumwa.....	7, 8	3.17			Astoria.....			6.43	
Logan.....	3, 4	2.60			Rhode Island.				
Dubuque.....	7, 8	2.63			Nayatt Point.....	12	2.30		
Louisiana.					Block Island.....	29, 30, 31	3.20		
Franklin.....	26	4.08	7.90		Texas.				
Port Eads.....	27	3.81	7.35		Brownsville.....	23, 24	6.56		15.71
Whiteville.....	26	5.31	6.70		Do.....	27, 28	4.88		
New Iberia.....	26	5.81	6.55		Indianola.....	25, 26	3.56		7.94
Point a la Hache.....	26	2.30	6.30		Galveston.....	25, 26	5.16		7.37
Luling.....	26, 27, 28	4.59	6.26		Fort Stockton.....	22 to 25	4.60		6.25
Thibodaux.....	26	3.24	6.12		Fort Concho.....	21, 25	3.30		
Grant Coteau.....	25, 26	3.50			El Paso.....	23, 24	2.11		
Lafayette.....	26	3.15			Vermont.				
Cheneyville.....	26	2.95			Dorset.....	3, 4	3.15		
Amite City.....	26	3.01			Lunenburg.....	3, 4	2.55		
Do.....	28	2.01			Washington Ter.				
Clinton.....	26	2.82			Fort Canby.....			6.24	
Baton Rouge.....	26	2.30			Wisconsin.				
Opelousas.....	26	2.33			Franklin.....	1, 2	2.25		
Red River Land'g.....	26	2.10			Manitowoc.....	1, 2	2.03		
Alexandria.....	26	2.39							

Indiana.—Spiceland, Henry county: monthly precipitation, 1.81, is 0.54 below the October average for the last thirty years.

Logansport, Cass county: monthly precipitation, 3.26, is 0.51 above the October average for the last twenty-five years.

Wabash, Wabash county: monthly precipitation, 3.75, is 0.47 in excess of the October average for the last nine years.

Kansas.—Yates Centre, Woodson county: monthly precipitation, 3.83, is 0.29 below the October average for the last four years.

Lawrence, Douglas county: monthly precipitation, 2.38, is 0.54 below the October average for the last seventeen years.

Independence, Montgomery county: monthly precipitation, 4.22, is 1.00 above the October average for the last twelve years.

Wellington, Sumner county: monthly precipitation, 2.90, is 1.05 below the October average for the last six years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 3.14, is about three-fourths of the October average for the last forty-seven years. For the first five months of the year the precipitation was 28.62; for the second five months it was only 12.87.

Maryland.—Fallston, Harford county: monthly precipitation, 1.48, is 1.86 below the October average for the last fourteen years.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 2.34, is 2.06 below the October average for the last forty-five years. The largest October precipitation for that period, 9.81, occurred in 1869; the smallest, 0.46, occurred in 1879.

Missouri.—Saint Louis: monthly precipitation, 1.86, is 1.19 below the normal for October.

New Jersey.—South Orange, Essex county: monthly precipitation, 2.90, is 0.59 below the October average for the last fifteen years.

New York.—North Volney, Oswego county: monthly precipitation, 3.00, is 0.61 below the October average for the last thirteen years.

Palermo, Oswego county: monthly precipitation, 2.65, is 0.95 below the October average for the last thirty-one years.

Ohio.—Wauseon, Fulton county: monthly precipitation, 3.01, is about the average for October for the last twelve years.

Pennsylvania.—Dyberry, Wayne county: monthly precipitation, 2.34, is 0.86 below the October average for the last fourteen years.

Texas.—New Ulm, Austin county: monthly precipitation, 1.78, is 2.77 below the October average for the last thirteen years.

Vermont.—Woodstock, Windsor county: monthly precipitation, 2.04, is 1.69 below the October average for the last sixteen years.

Virginia.—Wytheville, Wythe county: monthly precipitation, 0.86, is 2.08 below the October average for a period of twenty years.

Variety Mills, Nelson county: monthly precipitation, 0.96, is 1.81 below the October average for the last six years.

Washington Territory.—Bainbridge Island: monthly rainfall, 6.20, is the largest recorded in October during the last seven years.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 2.45, is 0.83 below the October average for the last eight years.

Wisconsin.—Madison: monthly precipitation, 4.60, is 1.57 in excess of the October average for the last thirty-one years.

SNOW.

East of the one hundred and second meridian the most southerly stations reporting the occurrence of snow during October, 1884, are in about 40° north latitude. At North Platte, Nebraska, and Allison, Kansas, snow fell on the 7th and 8th, respectively; and on the 23d snow fell as far southward as central Ohio and southern Pennsylvania. In the more north-

erly districts and in the mountain regions the dates on which snow fell during the month are quite numerous. In the several districts snow fell as follows:

New England.—At numerous stations throughout the northern part of the district on the 14th, 15th, 16th, 24th, 25th, 30th, and 31st; it was reported from scattering stations on the 13th, 18th, and 29th; on the summit of Mount Washington, 3d, 6th, 18th, 23d to 26th, 30th, 31st.

Middle Atlantic states.—At Troy, Pennsylvania, 17th; Dyberry, Pennsylvania, 18th; Chambersburg, Catawissa, Drifton, and Troy, Pennsylvania, on the 23d; Albany, New York, and Easton, Pennsylvania, 25th.

Ohio valley.—Columbus, Westerville, and New Athens, Ohio, 23d; Grampian Hills, Pennsylvania, 23d, 24th, 26th.

Lower lake region.—Of general occurrence on the 23d and 24th, and at scattering stations in western New York on the 18th and 25th.

Upper lake region.—Of general occurrence on the 22d, 23d and 24th, and at scattering stations on the 20th, 26th, 28th and 31st.

Extreme northwest.—Of general occurrence on the 20th, 21st, 26th, 27th, 28th and 31st; and at scattering stations on 22d, 29th and 30th.

Upper Mississippi valley.—Of general occurrence at stations north of Dubuque, Iowa, on the 22d, 23d, and 24th; and at Saint Paul, Minnesota, on the 31st.

Missouri valley.—At scattering stations on the 7th, 20th, 21st, 27th, and 31st.

Northern slope.—At numerous stations from 1st to 7th, 17th, 20th, 22d, 25th, 26th, 28th, 29th, and 31st.

Middle slope.—Denver, Colorado, 7th, 26th, 27th; Allison, Kansas, 8th; on the summit of Pike's Peak, Colorado, 7th, 10th, 15th, 16th, 19th, 20th, 21st, 25th, and 26th.

Southern slope.—Fort Stanton, New Mexico, 26th.

Middle plateau.—Fort Bidwell, California, 1st; Fort Bridger, Wyoming, 3d, 4th, 7th; Fort Thornburg, Utah, 31st.

Northern plateau.—Lake View, Oregon, 1st; Fort Klamath and Linkville, Oregon, 13th.

Middle Pacific coast region.—Red Bluff, California, 15th, on mountains east of station.

MONTHLY SNOW-FALLS.

[Expressed in inches and tenths.]

The following stations report monthly snowfalls of two inches or more:

Colorado.—Pike's Peak, 9.2.

California.—Summit, 21.0; Cisco, 13.0; Emigrant Gap, 6.0; Truckee, 4.0; Boca, 2.0.

Dakota.—Fort Buford, 3.3; Fort Totten, 2.5.

Maine.—Cornish, 4.0.

Massachusetts.—Rowe, 4.3.

Michigan.—Northport, 3.8; Traverse City, 3.0.

Montana.—Fort Shaw, 3.5; Fort Maginnis, 2.7; Fort Assinaboine, 2.1.

New Hampshire.—Mount Washington, 9.1; Antrim, 2.0.

New York.—Penn Yan, 3.0; North Volney, 2.2; Palermo, 2.0.

Nevada.—Otego, 4.0; Halleck, 3.0; Battle Mountain and Palisade, 2.0.

SLEET.

Fort Totten, Dakota, 28th.

Webster and Huron, Dakota, 20th.

Yankton, Dakota, 7th.

Boisé City, Idaho, 13th.

Worcester, Massachusetts, 31st.

Alpena, Michigan, 22d.

Escanaba, Michigan, 24th.

Grand Haven, Michigan, 22d, 23d, 24th.

Mount Washington, New Hampshire, 13th, 17th, 22d, 23d, 27th.

Oswego, New York, 23d, 25th.

La Crosse, Wisconsin, 31st.